Erebia are far more sparingly represented in China than in Europe; but *Lethe* is far better represented in China than in India, and *Ypthima* at least as well. The tropical subfamilies *Morphinæ* and *Acræinæ* are also represented in China, the first by four species, one of which, *Stichophthalma howqua*, is as large and handsome as a South American *Morpho*, and the other by one of the two Indian species, *Pareba vesta*, which extends its range to several parts of South-Western China. In Japan and the extreme east of China, we find one or two species belonging to peculiarly Nearctic forms, such as *Anthocharis scolymus*, for example.

In certain large genera, such as *Zephyrus*, *Thecla*, and *Papilio*, the number of Chinese species far exceeds those known to occur in Europe; but in the case of *Papilio*, at least, this is mainly due to the large number of properly Indian species which extend their range to China.

It is among the *Papilionidæ* and *Pieridæ* that we find some of the most interesting of the Chinese and Central Asian forms, especially those allied to *Parnassius*, *Aporia*, and *Colias*. There are only about thirteen well-marked genera of *Papilionidæ*, except the heterogeneous genus *Papilio* itself; and eight of these are represented in Mr. Leech's district, the other five being *Hypermnestra* (South-West Asia), *Eurycus* (Australia), *Euryades* (South America), *Thais* (South Europe), and *Bhutanitis* (Bootan). The headquarters of *Parnassius*, however, are perhaps in the mountainous districts rather beyond the range of the present work, as Mr. Leech enumerates only eight species, which seems to us to be rather a small number. Many curious genera allied to *Aporia* are also found in the south-western districts of China bordering on Thibet, such as *Mesapia*, *Davidina*, &c., most of which bear a general resemblance to our Green-veined White (*Pieris napi*). Of these, Oberthür's genus *Davidina* is the most curious, as the wing-cells are divided by longitudinal nervures, a characteristic which we do not meet with in any other butterfly. Only four species of *Colias* are enumerated, the headquarters of this genus also being apparently rather beyond Mr. Leech's limits. He has, however, sunk all the Japanese forms described as distinct by various authors, as varieties of *C. hyale*, Fabr.; but this is one of those questions which will never be disposed of to the satisfaction of entomologists without long and careful breeding of the supposed varieties or species. Some authors, however, have certainly gone too far in regarding mere varieties of butterflies as entitled to specific rank; while others have erred more seriously in the opposite direction, by placing together perfectly distinct species as varieties. It frequently happens that species which subsequently prove to possess very important distinctive characters, have a much greater superficial resemblance to others than obtains between seasonal or otherwise dimorphic forms of insects which belong indubitably to the same species. But if a good species is sunk as a synonym or a variety, the next entomologist who considers it to be distinct will very likely overlook the previous notices, and describe it as new. We are constantly discovering that names which stand as synonyms in our books really belong to insects which have since been described as new under other names.

In taking leave of this extremely interesting book, we must congratulate Mr. Leech on having successfully brought to a conclusion a work which will hold a worthy place among the many valuable local butterfly faunas which have been published in England, of recent years, by Godman and Salvin, Moore, Trimen, Distant, and others.

W. F. K.

OUR BOOK SHELF.

Rainmaking and Sunshine. By John Collinson. (London: Swan Sonnenschein and Co., 1894.)

THE only object there can possibly be in giving a notice of this book is to warn intending purchasers of its contents, lest they be deceived by the title, and hope to find some account, more or less interesting, of the experiments that were made in America, a short time back, with the view of procuring a rainfall. This book has not even that recommendation. One has not much patience with weather prophets, who base their assertions on conjunctions of the planets, or some equally occult and absurd methods; but Mr. Collinson is in advance of all such vendors of nostrums. Not for him the uncertain, or partial, fulfilment of hazily expressed prophecies, not for him the long and careful study of signs and portents; he, himself, is the rainmaker, he is the dispenser of sunshine and cloud, he is gifted with the divine power that storms and floods and drought obey. Here is his own modest statement: "Thus when suitably placed as to residence, the results of his (the author's) action on magnets are certain to produce changes in the weather, and other effects, as interesting and useful, bearing on meteorological science generally. They are simply marvellous. Storms, floods, drought, &c., can be induced, on the one hand, and the prevalence of sunshine and warmth, in opposition to coldness and gloom, on the other. His action in this direction, judging from experience, could bring any district, and, indeed, the country generally, such favourable weather as would recall the glories of the Golden Age." (p. 18.) Another passage that makes one doubt whether the book is to be taken seriously, relates how a prophet (Query Dr. Falbe, says the author) foretold bad weather for March 28, 1893, sudden fall of the barometer, great conflicts of wind and water, and various other disasters. "About the same time Prof. Jenkins foretold that there would be a cyclone with snow on March 25. I took care that these storms did not happen." (p. 186.)

But there is one form of internal evidence which forbids us concluding that the author has perpetrated an elaborate joke. He claims to have given to a whole nation of holiday-makers ten days of enjoyable weather at Easter, but refused to exercise his godlike gift on behalf of suffering humanity at the following Whitsuntide, because "NO" (in very large capitals) "suitable sign of appreciation had then been received from any of those who largely benefited by the results of the fine Easter weather." (p. 214.) One would like to know what is the force of "then" in this sentence. Have the railway companies rewarded this gentleman since? And what would be a suitable sign of appreciation to a man so endowed? But enough of this nonsense; whoever else the book may amuse or edify, it will scarcely find readers among the subscribers to NATURE.

W. E. P.

The Elements of Graphic Statics: a Text-Book for Students of Engineering. By L. M. Hoskins, Professor of Pure and Applied Mechanics in the Leland Stanford Junior University; formerly Professor of Mechanics in the University of Wisconsin. (London: Macmillan and Co., 1892.)

ALTHOUGH the fundamental ideas of Graphical Methods in Statics can be traced back to the writings of Stevinus,

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of Bruges (*c.* 1600), and although they must have been employed by scientific engineers, such as Brunel, the subject of Graphical Statics as known to the mathematician dates only from Maxwell's writings on the subject, and to Culmann's elaborate treatise in German; also to Colonel Sir George Clarke's exhaustive work.

The subject of Statics, which had come to a standstill, was revivified by the graphical methods now employed by every engineer and architect.

But as the subject is nothing unless employed practically by the draughtsman on the drawing board, it has not yet conquered the prejudices of the abstract mathematician, although many problems of allied descriptive geometry, required in the construction of inertia ellipses and curves (Part iii.), are well worthy of the attention of the pure geometer.

The present treatise is designed as an elementary textbook for the use of students of engineering; and the illustrations are drawn carefully to scale, representing each some real object.

The method of lettering, attributed to Bow, is now more appropriately assigned to Henrici; the author very rightly insists upon the fundamental importance of this lettering, in emphasising the reciprocity existing in the diagrams.

Incidentally the method of Graphical Statics emphasises the proper treatment of Statical problems, which is always to consider a system of balancing forces; and thus to banish the word Resultant from Statics unless employed to represent the force which if reversed will balance the remaining forces of the system. G.

A Naturalist on the Prowl. By Eha. Pp. 257. (London: W. Thacker and Co., 1894.)

From Spring to Fall. By "A Son of the Marshes." Edited by J. A. Owen. Pp. 239. (London: William Blackwood and Sons, 1894.)

THE author of "A Naturalist on the Prowl" knows how to write pleasantly on the natural history of the Indian jungle. There is not a dull page in his book. It is only rarely that we meet with a volume so full of interesting observations, and so free from stodginess. In "Eha's" company we travelled from the first to the last page, here admiring the keenness of his perception, there laughing at his humorous comments, and always made happy by his geniality. He does not "prowl" to kill, neither is he imbued with the spirit that induces many people to collect shells and postage-stamps as specimens; for though he recognises that "without a collection, a man's knowledge of natural history becomes nebulous, and his pursuit of it dilettante," he also knows that there is a possibility of a man degenerating into a mere collector, and ceasing to be a naturalist. Mr. R. A. Sterndale enriches the volume with eighty illustrations, mostly sketched from life.

The works of "A Son of the Marshes," on country life and scenery, are renowned for their simple beauty and sympathetic expression. Under the editorship of Mrs. Owen, the volume before us, like other books by the same author, is delightful reading.

Edible and Poisonous Mushrooms. By Dr. M. C. Cooke. (London: S.P.C.K., 1894.)

IT may be safely asserted that fewer kinds of fungi are used for food in Great Britain than in any other country in Europe. This is the more remarkable when we take into consideration the indebtedness of the present advanced state of Mycology to the researches of our countrymen, amongst whom may be mentioned Bolton, Sowerby, Badham, Berkeley, and Broome. The author of the work under consideration has also contributed very materially to a knowledge of edible kinds of fungi by various publications, and more especially in promoting annual fungus forays in various parts of the country. Poisonous fungi liable to be confounded with the numerous edible kinds are very few in number, and the majority of casualties, both at home and abroad, are caused by eating *Amanita phalloides*, a fungus very different in appearance from the common mushroom (*Agaricus campestris*), but which, probably from its neat and attractive appearance and size, appears to commend itself to unsuspecting persons, and being usually very abundant and widely distributed, is likely to be a continual source of danger until its characters and general appearance are more generally known.

Dr. Cooke very properly condemns the various rule-of-thumb methods for discriminating between edible and poisonous kinds of fungi, and shows that the essential characters of the various kinds must be thoroughly grasped, as being the only certain means of identification; and this method, with Dr. Cooke's book as a guide, should not prove a difficult task. The written descriptions of the various kinds, without being technical, are very clear and to the point, and the eighteen coloured plates are excellent. Finally, the best methods of cooking are given. The book is well printed, attractive externally, and very cheap.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

What are Acquired Characters?

FOR some while past, as we all know, a great contest has been raging as to whether acquired characters of an organism can or cannot be transmitted from one generation to another; and mighty authorities, on the one side, say that they can be; and great authorities, on the other, aver that they cannot be.

As a spectator of this contest, I have tried to understand it; and, in the first place, I have endeavoured to make out what is meant by the phrase "acquired characters"; or, in short, what is meant by the word "acquired," as used, in this connection, by Weismann, his friends, and his antagonists.

It is evident that the word is not used in its primary and natural signification; for, as on the theory of evolution (on which hypothesis the whole discussion proceeds), man has been evolved from an amœba or an ascidian, or some other early form, it follows that every character by which a man differs from this, his first progenitor has been acquired at some time between the two termini of the course of evolution, and, if the word were used in its ordinary sense, it would further follow that none of these characters could be transmitted by man to his offspring. This is manifestly untrue, for the issue of a woman is not simply an amœba. In fact, Weismann himself implies plainly that he does not use the word "acquired" in its ordinary signification, and asserts that its scientific value lies in its restricted use. ("Essays on Heredity," English translation, vol. i., first edition, p. 412.)

It becomes then very important to get at an accurate and workable definition of the word "acquired" for the purpose in hand; and such a definition must, I conceive, satisfy the following conditions:—(1) It must be such as to include all characters that are "acquired" within the restricted meaning of the word, and to exclude all characters that are not within the meaning; (2) it must be stated in physical, and not in metaphysical terms; (3) it must not be stated in terms derived from hereditability or the contrary, or in terms of any hypothesis or theory; (4) in order that it may be of use for scientific purposes, it must be stated in terms that admit of ascertainment and verification.

Of the importance of a clear definition of these words every one must, I think, be conscious; and if authority were required, we have that of Prof. Weismann himself. "I should wish to point out," he says, "that we ought above all to be clear as to what we really mean by the expression 'acquired character.'" ("Essays," vol. i. p. 169.)

Now, I do not profess to have read all that has come from the pen of Prof. Weismann, and still less the whole literature that

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